

## ABSTRACT

A wireless communication system comprises a base station (4) and terminals (1) - (3). The base station (4) and the terminals (1) - (3) perform a space division 5 multiplex wireless transmission. Each of the base station (4) and the terminals (1) - (3) comprise a multi-beam antenna for space division multiplexing. A beam pattern formed by the multi-beam antenna of the base station (4) is orthogonalized based on transfer function values of a radio-wave-propagation characteristic formed between antenna elements of the multi-beam antenna of the base station (4) and antenna 10 elements of multi-beam antenna of the terminals (1) - (3).